USSR

UDC: 518.5:681.3.06

LEYFMAN, L. Ya., SATANOVA, E. A.

"Solution of Pert Problems in the Case of Limited Unstored Resources Using the Random Search Method"

Sb. tr. In-t gidrodinam. Sib. Otd. AN SSSR (Collected Works. Institute of Hydrodynamics. Siberian Department, Academy of Sciences of the USSR), 1970, vyp. 3, pp 71-108 (from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V858)

Translation: The paper deals with problems of minimizing development time in the case of unstored limited resources. The corresponding algorithms and program for the M-20 computer are described. V. Mikheyev.

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USSR

UDC 669.715.3.85.86.018.29(088.8)

DRITS, M. Ye., KADANER, E. S., TOROPOVA, L. S., KOP'YEV, I. M., DEMIDOV, Yu. S., LEYKIN, A. I., YEGOROV, N. I. [Institute of Metallurgy imeni A. A. Baykov]

"Aluminum-Based Alloy for Foil"

USSR Author's Certificate No. 276419, Filed 13/11/68, Published 16/10/70. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5, I748P).

Translation: The alloy has the following composition (%): Cu 0.5-2.0, at least one of the REM 0.1-0.5 and Zr 0.05-0.15, impurities $\leq$ 0.01, remainder Al. The introduction of Cu and the rare and refractory metals increases its physical and mechanical properties. The alloy shows σ_b 30 kg/mm^2, withstands $30 \cdot 10^6$ cycles without rupture, and can be rolled into a foil 10-20μ thick.

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USSR

UDC 669.715.22.85.86.296.018.2(088.8)

DRITS, M.Ye., KADANER, E. S., TOROPOVA, L. S., KOP'YEV, I.M., DEMIDOV, Yu.S., LEYKIN, A. I., YEGOROV, N. I.

"Aluminum-Based Alloy for Foil"

USSR Author's Certificate No. 276420, Filed 13/11/68, Published 16/10/70. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5, 750P).

Translation: This alloy has the following composition (%): Ag 0.75-2, REM 0.1-0.5, Zr 0.05-0.15, impurities < 0.01, Al remainder, has high σ_b (26 kg/mm^2) and high durability and stability of properties with cyclical loading, has good technological properties for rolling to a thickness of 10-20μ; the foil has good surface qualities.

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Lasers & Masers

USSR   UDC   621.373.826

BABICH, V. M., LEYKIN, A. Ya., and SOLOV'YEV, V. S.

"Combined System of Intermode Beat Frequency Automatic Tuning
System in a Laser With Synchronous Oscillations"

Radiotekhnika. Resp. mezhved. temat. nauch.-tekhn. sb. (Electronics
Engineering, Republic Interdepartmental Thematic Scientific-
Technical Collection) No 21, 1972, pp 185-194 (from RZh--Radiotekh-
nika, No 10, 1972, Abstract No 10D157)

Translation: A selective analysis is made of a method proposed
earlier for stabilizing the length of the resonator in a multi-
mode laser operating with longitudinal oscillation synchronism.
The transient process of the automatic frequency adjustment system
is discussed, and the analytic condition for stable combined opera-
tion of the two-resonance circuit system is found. The effect of
frequency fluctuations of the intermode beat oscillations on the
automatic tuning system is analyzed. Three illustrations, biblio-
graphy of two. Resume

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USSR

UDC 621.375.9

DOROGAYA, L. N., ZIMOKOSOV, G. A., LEIKIN, A. Ya., RATNER, A. M.,
SOLOV'YEV, V. S.

"Simple Method of Operative Measurement of the Angular Divergence of a
Laser"

Abstract: A method is described for measuring the angular divergence of the
emission of a continuous-action laser based on transformation of the divergence
of the laser beam by a prism. The theoretical basis for the method is pre-
sented, and the parameters of the device are calculated. The possibility
of using the method for the pulse-action laser is investigated.

The described method was used to measure the angular divergence of the LG-56
helium-neon laser with a wave-length of 0.63 microns. A prism with its base
in the form of an equilateral right triangle was rotated by an electric motor
with a frequency of 7.2 hertz. The receiver was the FAU-68 photomultiplier
defined by a slit, the width and position of which were regulated by screws.
The signal was transmitted from the photomultiplier to the S1-19 oscillograph.
On synchronizing the scanning with the rotation frequency of the prism,
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USSR

DOROGAYA, L. N., et al., Izmeritel'naya Tekhnika, No 4, 1973, pp 30-31

clear pulses were observed on the oscillograph screen which reproduced the radiation pattern. With low pumping when only the basic transverse os- cillation was observed visually in the near field, the shape of the pulse approached a gaussian curve. The halfwidth of the pulse recalculated for angles was 6'±30", which agrees with the angular divergence of the basic mode field of 5'24" calculated by the well-known formulas. With an increase in the pumping current strength, when the higher transverse modes were visually observed, the pulse on the oscillograph screen revealed a cor- responding broadened structure. The shape of the pulse does not depend on the linear width of the slit d or its position c in the region correspond- ing to a resoltuion of less than 2'.

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USSR

UDC   621. 373.826:621.317.38

LEYKIN, A. YA, MUNTYAN, K. I., RUBINSHTEYN, B. I., and SOLOV'YEV, V. S.

"Using Resonance Luminescence and the Method for its Registration With the Aim of Measuring the Energy of Pulsed Lasers"

Translation: The authors describe the principles for measuring the energy of lasers with a modulated energy factor by transforming the radiation energy into luminescence energy. Three methods for luminescence resistration are considered. The use of resonance luminescence and the methods described for its registration make it possible to simplify the process for measuring the energy of high power, nanosecond, optical pulses within a broad dynamic range. Original article: one illustration and five bibliographic entries. Resume.

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USSR

UDC 535.22+621.317.36.031:621.375.826

LEYKIN, A. YA., SIKORA, S. V., SOLOV'YEV, V. S., and FERTIK, N. S.

"On Measuring the Speed of Light and Setting Up Frequency Measurements in the Submillimeter Band"

Khar'kov, Ukr. resp. nauch.-tekhn. konf., posvyashch. 50-letiyu metrol. sluzhby USSR, 1972 -- sb. (Ukrainian Republic Scientific and Technological Conference Honoring the 50th Anniversary of the Ukrainian SSR's Metrological Service, 1972 -- Collection of Works), 1972, pp 18-19 (from Referativnyy Zhurnal -- Metrologiya i Izmeritel'naya Tekhnika, No 2, 1973, Abstract No 2.32.53)

Translation: One of the most precise methods for measuring the velocity of electromagnetic wave propagation was developed under the leadership of G. S. Simkin, and consists of simultaneously measuring the frequency and wave length of radiation in the 8-mm band. It is a well known fact that, in this case, the largest component of the total error is caused by the indeterminacy of the wave front during the measurements of the wave length. The diffraction correction, which must be computed under these circumstances, is determined by calculating the field at a number of points on the radiator's aperture. The natural way of reducing or even eliminating this error is to approximate the radiator's long-range zone, for the purpose of creating a quasiplane wave in

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USSR

LEYKIN, A. YA., et al., Ukr. resp. nauch.-tekhn. konf., posvyashch. 50-letiyu metrol. sluzhby USSR, 1972 -- sb, pp 18-19

the area of the measurements. In this case, an approach based on the shorter (on the order of 0.05-0.5 mm) wave lengths proves to be promising. The existence of lasers operating in this band made it possible to develop a set of equipment and to make preliminary measurements on the 0.337 mm wave length. This made it possible for the following to be accomplished: 1) research in the characteristics of lasers; 2) research in frequency transformers operating in the submillimeter band; 3) the creation of frequency synthesizers operating in the submillimeter band; 4) measurement of the wave lengths of lasers operating in the submillimeter band; 5) the creation of a standard for optical band frequencies. The complex of projects that the authors carried out made it possible to make the first measurements of the speed of light in a vacuum for waves with λ = 337 microns.

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USSR

UDC: 529.78

LEYKIN, A. Ya., TKACHENKO, V. S., FEDULOV, . M., FERTIK, N. S.

"Cesium Nuclear-Beam Reference in the Secondary Frequency and Time Standard of Khar'kov State Institute of Measures and Measuring Instruments"

Tr. Metrol. In-tov SSSR. Khar'kov. NII Metrol. [Works of Metrological Institutes of the USSR. Khar'kov. Scientific Research Institute for Metrology], 1972, No 7, pp 80-99 (Translated from Referativnyy Zhurnal Metrologiya i Izmeritel'naya Tekhnika, No 4, 1973, Abstract No 4.32.540, from the Resume).

Translation: Results are presented from studies of the short-term and long-term instability of the frequency of cesium nuclear beam standards. The reproducibility of the frequency of a cesium nuclear beam standard, measured by comparison of the frequency of two standards in the AFC mode, is $3.6 \cdot 10^{-11}$. It is shown that the relative error introduced by the electronics developed at the Khar'kov State Institute of Measures and Measuring Instruments for the cesium standard is not over $3 \cdot 10^{-12}$. The change in phase difference in the arms of the U-shaped resonator with time was tested by measurement of the quality of the U-shaped resonator and width of the spectral absorption lines.

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LEYKIN, A. Ya., et al., Tr. Metrol. In-tov SSSR. NII Metrol., 1972, No 7, pp 80-99

The measurement, continued over 10 days, showed that the frequency shift due to changing phase difference was not over $(1-2) \cdot 10^{-12}$. 11 figures, 3 biblio-graphic references.

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USSR

LEYKIN, A. Ya., ROVINSKIY, V. Z., TOMASHKO, I. V., FERTIK, N. S.

"Use of Passive Rubidium Frequency Measures as Storage Devices in the Time and Frequency Service Operated by the Khar'kov State Institute of Measures and Measuring Instruments"

Translation: The primary characteristics of passive rubidium frequency measures which have been developed and the first results of their use as storage devices in the time and frequency service by the Khar'kov State Institute of Measures and Measuring Instruments are reported. The long-term frequency instability of the rubidium storage devices is $(1.5-2) \cdot 10^{-11}$. The mean square relative random frequency deviation from its mean value with a time interval measurement of one day. No systematic drift of the devices exceeding the measurement of error was discovered over the measurement time (two months). The short-term frequency instability of the devices is

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LEYKIN, A. Ya., et al., Tr. Metrol. In-tov SSSR. NII Metrol., 1972, No 7, pp 360-374

$$1.5 \cdot 10^{-10} \text{ with a time measurement interval of } 0.1 \text{ sec}$$
$$5 \cdot 10^{-11} \quad " \quad " \quad - \quad 1 \text{ sec}$$
$$1.5 \cdot 10^{-11} \quad " \quad " \quad 10 \text{ sec}$$
$$3 \cdot 10^{-12} \quad " \quad " \quad 100 \text{ sec}$$
$$2.5 \cdot 10^{-12} \quad " \quad " \quad 1 \text{ hr}$$

The values of relative mean square random frequency variation are presented. 3 figures, 2 biblio. refs.

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USSR

BABICH, V. M., LEYKIN, A. Ya., SOLOV'YEV, V. S.

"Combined System for the Automatic Tuning of the Frequency of Intermodal
Beats of a Laser With Synchronized Oscillations"

Translation: Stabilization of the resonator length of a multimodal laser
operating in the mode of synchronization of longitudinal oscillations is
discussed. The transition process of an automatic frequency control system
is discussed and the condition for stable concurrent operation of the two-
loop system is found analytically. The effect of fluctuations in the fre-
quency of intermodal beats on the operation of the automatic frequency
system is analyzed. Authors abstract.

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Acoustical and Ultrasonic

ZEL'DIS, V. I., LEYKIN, I. A., ROZENBERG, A. D., and RUSKEVICH, V. G., Institute of Radio Physics and Electronics, Academy of Sciences, Ukrainian SSR

"A Study of the Amplitude Characteristics of Sound Signals Scattered by a Rough Water Surface"

Abstract: The results are presented of an experimental investigation of the amplitude characteristics of a back-scattered hydroacoustic signal within the range of 15 to 150 kHz and with slip angles from 10 to 50°. With the aim of additional verification of the basic propositions of the theory of resonance scattering, based upon the theory of small perturbations, the investigation was conducted in a tank and on the open sea. Detailed measurements were taken of the characteristics of the scattering surface under swell conditions of up to 5 points [very rough sea]; this permitted the data of acoustic measurements to be compared with calculation results. A good explanation of the obtained results can be provided within the framework of the theory of resonance scattering. 6 figures. 7 references.

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USSR   UDC 669.15-194!18'14.018

LEYKIN, I. M., LITVINENKO, D. A., and URDCHENKO, A. V.

Proizyodstvo i Svoystva Nizkolegirovannykh Staley (Production and Properties
of Low-Alloy Steels), Moscow, Izd-vo "Metallurgiya," 1972, 256 pp

Translation of Introduction: For a long time the main structural material
for the production of weldments was low-carbon steel (types St. 3, St. 2,
etc.), characterized by guaranteed but low strength, high ductility, and
good engineering properties, including weldability. The relatively low
price of this steel, which does not contain special alloying elements, was
also significant. Despite the merits of low-carbon steel, it has a number
of shortcomings of which the most important are relatively low strength,
low resistance to brittle fracture, and increased sensitivity to mechanical
hardening. The last two properties are determined to a significant extent
by the degree of metal deoxidation (rimmed, semi-killed, and killed); even
the best of these -- killed low-carbon steel -- is characterized by low
values of impact strength at minus temperatures, which limits it application
in a number of cases. Intensive research in recent years has indicated that
with the use of special technological processes (regulated rolling, thermal
hardening, etc.) or by introduction of modifiers (niobium, vanadium, etc.)
it is possible to noticeably improve the qualitative properties of low-carbon
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LEYKIN, I. M., et al., Proizyodstvo i Svoystva Nizkolegirovannykh Staley
(Production and Properties of Low-Alloy Steels), Moscow, Izd-vo "Metallurgiya,"
1972, 256 pp

steel, including its resistance to brittle fracture. The shortcomings of low-
carbon steel can be overcome by changing over to low-alloy steels (steels
with increased strength) the increased strength and resistance to brittle
failure of which can be achieved by the addition of alloying elements and
refinement of structure.

Although the first attempts abroad at the use of low-alloy steels as a
structural material were made in the last century (1898), in essence the
main development and increase in the production volume of these steels in
the modern sense have occurred in the last 15-20 years. In the first stage
these steels, used in the unwelded version, were characterized by high carbon
content (up to 0.35%) and a relative high percentage of alloying elements
(2-3% Ni, 1.25% Si (max), and 1.5% Mn (max). One of the first low-alloy
steels was steel F ($\leq$0.25% C, $\leq$1.5% Si, $\leq$1.2% Mn). Modern weldable low-
alloy steels of increased strength have been developed in the past 30 years.
In this same period of time the use of domestic low-alloy steels for bridge
and ship construction (steels 30G, 20G2, etc.) was started, although the
broad development of good weldable low-alloy steels has taken place since

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LEYKIN, I. M., et al., Proizyodstvo i Svoystva Nizkolegirovannykh Staley (Production and Properties of Low-Alloy Steels), Moscow, Izd-vo "Metallurgiya," 1972, 256 pp

the post-war years (1947). Since this time, the scientific research insti- tutes and metallurgical plants have significantly expanded the assortment of low-alloy steels, mastered the technology of their production, and organized the series supply of rolled products to a wide circle of consumers. These metal-consuming branches of the economy (main pipeline construction, trans- portation and highway machine-building, automobile manufacturing, commercial construction, etc.) are being rapidly developed. For example, in the past five years more than two million tons of high-strength low-alloy steel has been produced for construction purposes out of a total volume of 20 million tons of metal-construction works. The metallurgical industry is introducing new capacities and technological improvements in all sections of the metal- lurgical allotment to facilitate production of rolled products with high qualitative indices which exceed the best samples of foreign standards.

The specific weight of low-alloy steel in the overall smelting of steel in our country grows continuously. In 1960 the percentage of low-alloy steel amounted to 5.8%, in 1965 -- 7.6%, and in 1969 -- 9.1%. In the period from
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USSR

LEYKIN, I. M., et al., Proizyodstvo i Svoystva Nizkolegirovannykh Staley (Production and Properties of Low-Alloy Steels), Moscow, Izd-vo "Metallurgiya," 1972, 256 pp

1955 to 1970 the volume of production of low-alloy steel increased 16.8 times. At the present time the metallurgical industry produces a wide assortment of low-alloy rolled products. The distribution of low-alloy steels produced in the Soviet Union in 1970 is characterized by the following data for rolled products: large grade 7.3%; medium and small grade 45.5% (mainly steel for reinforced concrete); shaped and curved shapes 4.9%; thick sheet 18.2%, thin sheet 0.4%, and strip 23.7%. The distribution as to alloying is as follows: manganese steel 27.95%, structural Si-Mn steels 15.65%, and strip steel 40.9%; Cr-Si-Mn steel 3.55%, Cr-Si-Ni-Cu steel 5.9%, others -- 6.05%.

Manganese and Si-Mn steels make up the main mass of low-alloy steels in our country. This is explained by the existence of large natural resources of raw material for obtaining the corresponding ferroalloys and their relatively low cost.

Thus, the cost of one ton of steel in ingots upon adding 0.1% Mn is increased only 35 kopecks, 0.1% Si -- increased by only 42 kopecks, 0.1% Cr -- by 50 4/7

USSR

LEYKIN, I. M., et al., Proizyodstvo i Svoystva Nizkolegirovannykh Staley
(Production and Properties of Low-Alloy Steels), Moscow, Izd-vo "Metallurgiya,"
1972, 256 pp

kopecks, and nickel -- by 3 rubles, 60 kopecks, copper -- by 83 kopecks,
vanadium -- 7 rubles, 40 kopecks, niobium -- 21 rubles, and titanium by 2
rubles, 50 kopecks.

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LEYKIN, I. M., et al., Proizyodstvo i Svoystva Nizkolegirovannykh Staley
(Production and Properties of Low-Alloy Steels), Moscow, Izd-vo "Metallurgiya,"
1972, 256 pp

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USSR

LEYKIN, I. M., et al., Proizyodstvo i Svoystva Nizkolegirovannykh Staley
(Production and Properties of Low-Alloy Steels), Moscow, Izd-vo "Metallurgiya,"
1972, 256 pp

USSR

GOL'DSHTEYN, M. I., BLYUM, E. E., GRIN', A. V., SELETKOV, A. I., LITVINENKO, D. A., LEYKIN, I. M., RUDCHENKO, A. V., OREL, E. I., VAYNTRAUB, S. S., LOKTIONOV, P. Ya., LASHCHEV, V. Ya., MOSIOSHVILI, V. V., MIROSHNICHENKO, S. I., and KONDRASHOV, M. M., Ural Scientific Research Institute of Ferrous Metals, Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin, and Kommunarsk Metallurgical Plant

"Adoption of the Industrial Production of 15G2AF Sheet Steel"

Abstract: An investigation of the 15G2AF plate steel (10-25 mm), commer- cially produced at the Kommunarsk Metallurgical Plant, revealed that alloying of the manganous structural steel with nitrogen and vanadium increases the strength and plasticity properties of the normalized rolled steel. Normalizing of the metal effects a size reduction of the grain (to 10-12), which assures a low (-100°C to -120°C) cold brittleness threshold. The strength of the 15G2AF steel was found to be at least 60 kg/mm² and the yield stress at least 45 kg/mm². Use of 15G2AF steel for welded structures decreased weight, in comparison with steel 10G2S1, by 13.6%.
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1/2   016   UNCLASSIFIED   PROCESSING DATE--20NOV70
TITLE--ALLOYING OF STEEL -U-

AUTHOR-(05)-LITVINENKO, D.A., RUDCHENKO, A.V., TURPANOVA, G.A., LEYKIN,
I.M., SHUSHLEBIN, B.A.
COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 263,637
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--10FEB70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CHEMICAL PATENT, ALLOY STEEL, STEEL MANUFACTURING PROCESS,
NITRIFICATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/1821   STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0132086
                          UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--20NOV70
CIRC ACCESSION NO--AA0132086
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   STEEL IS ALLOYED WITH N BY POURING
A STREAM OF HOT METAL OVER STABLE METAL NITRIDES.

UNCLASSIFIED

UDC 535.568.1

USSR

IVANOVA, N. V., LEYKIN, M. V., Candidate of Sciences

"IG-86 Miniature Portable Polarimeter"

Leningrad, Optiko-mekhanicheskaya promyshlennost', No. 7, Jul 71, pp 27-29

Abstract: A miniature portable polarimeter used to study the stressed state of objects using an optically sensitive coating is described. An optically sensitive or photoelastic coating is described as a coating sensitive to stress. It is noted that the absence of series-production of miniature portable polarimeters is holding back the development of optically sensitive coatings in the USSR. The IG-86 polarimeter developed by the authors shows the interference picture localized in the plane of optically sensitive coatings under conditions of both plane and circular polarization. The stressed state can be studied by observing the interference pattern and measuring the optical difference of the path both by the method of color comparison and by the compensation method. The difference in the major stresses is measured at the particular point of the object and the division of the major stresses is made by one of the existing methods. An optical diagram and specifications of the device are given. The dimensions of the device in the working position are 400 x 400 x 80 mm, the

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USSR

IVANOVA, N. V., LEYKIN, M. V., Optiko-mekhanicheskaya promyshlennost', No. 7,
Jul 71, pp 27-29

wight of the device itself is 3 kg and the weight of the battery is 2 kg.
Tests of the device in coal mines of the Kuzbass showed that the working model
satisfies the requirements imposed on a polarimeter intended for field studies.

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1/2   036   UNCLASSIFIED   PROCESSING DATE--11SEP70
TITLE--THERMALLY IMPROVED STEEL 17G2SF FOR GAS PIPELINE PIPES OF LARGE
    DIAMETER -U-
AUTHOR--LEYKIN, I.M., LITVINENKO, D.A., MATROSOV, YU.I., SITNOVA, N.V.

COUNTRY OF INFO--USSR

SOURCE--METALLOVED. TERM. OBRAB. METAL. 1970, (2) 9-12

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ALLOY DESIGNATION, LOW ALLOY STEEL, STEEL PIPE, SHEET METAL,
    IMPACT STRENGTH, METAL CRACKING, CRACK PROPAGATION, METAL AGING,
    STRAIN/(U)17G2SF LOW ALLOY STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/1309   STEP NO--UR/0129/70/000/002/0009/0012

CIRC ACCESSION NO--AP0106086
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0106086
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IMPROVED SHEET STEEL 17G2SF,
   FOLLOWING ANNEAL AT 500-50DEGREES, RESULTS IN LIMITS OF STRENGTH UP TO
   80 KG-MM PRIME2, YIELD 65-70 KG-MM PRIME2 WITH HIGH PLASTICITY, IMPACT
   STRENGTH ALPHA SUBN PRIME NEGATIVE40 LARGER THAN OR EQUAL TO 10 KG,M-CM
   PRIME2, ALPHA SUBN PRIME NEGATIVE80 LARGER THAN OR EQUAL TO 8 KG,M-CM
   PRIME2, AND CRACK DEVELOPMENT FUNCTION SIMILAR TO 2.5 KG,M-CM PRIME2.
   RAISING THE ANNEALING TEMP. TO 600-30DEGREES INCREASES THE CRACK GROWTH
   FUNCTION FROM 3.5 KG,M-CM PRIME2 AND PRESERVES THE LIMITS OF STRENGTH
   LARGER THAN 70 KG-MM PRIME2. STEEL 17G2SF, IN THE THERMALLY IMPROVED
   CONDITION, HAS LITTLE SUSCEPTIBILITY TO STRAIN AGING. STEEL 17G2SF IS
   RECOMMENDED FOR THE PRODUCTION OF THERMALLY STRONG PIPES WITH A BREAKING
   POINT OF 70 KG-MM PRIME2 FOR USE AS GAS LINES IN NORTHERN REGIONS AS
   WELL AS A QUALITY HIGH STRENGTH STEEL WITH YIELD OF LARGER THAN 50-60
   KG-MM PRIME2 FOR USE IN METAL CONSTRUCTION.

UNCLASSIFIED

USSR   UDC: 541.127:535.243.082

GUREVICH, M. M., KOLYADIN, K. M., LEYKIN, S.M.

"High-Speed Spectrophotometers for Investigation of Reaction Kinetics"

Optich. i Titrometrich. Analizatory Zhidk. Sred [Optical and Titrometric Analyzers for Liquid Media], Reports of All Union Conference, 1971, Part 1, Tbilisi, 1971 pp 14-19 (translated from Referativnyy Zhurnal Metrologiya i Izmeritel'naya Tekhnika, No 2, 1972, Abstract No 2.32.1089 by V. S. Krasnova)

Translation: A description and diagram of the domestic SP-127M (SPV-2) high speed spectrophotometer is presented. This instrument is designed for investigation of the kinetics of chemical and biochemical reactions and rapid spectrophotometry of unchanged objects. The SP-127M is a two-channel spectrophotometer with a mirror monochromator and photoelectric recording. The spectral area of operation of the device is 250 - 1000 mμ, divided into 4 ranges: 250-470, 400-650, 600-850 and 800-1000. The FEU-39 is used for operation in the first 2 ranges, the FEU-28 is used for operation in the 600-1000 mμ range. The device has 2 operating speeds - 200 and 500 spectra per second. The device is equipped with an attachment for performance of photochemical reactions. The SP-154 spectrophotometer with spectral range 350-700 mμ and 3 operating speeds - 100, 200 and 400 spectra per second - is based on the

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USSR   UDC: 541.127:535.243.082

GUREVICH, M. M., KOLYADIN, K. M., LEYKIN, S. M., Optich. i Titrometrich. Analizatory
Zhidk. Sred [Optical and Titrometric Analyzers for Liquid Media], Reports of All
Union Conference, 1971, Part 1, Tbilisi, 1971, pp k4-k9 (translated from
Referativnyy Zhurnal Metrologiya i Izmeritel'naya Tekhnika, No 2, 1972, Abstract
No 2.32.1089 by V. S. Krasnova)

SP-127M. The photometer includes an integrating sphere, allowing reactions
involving production of a sediment to be studied. 3 figures; 5 biblio refs.

2/2

LEYKIN, V. D.

"Optimal Synthesis of Coupling Units"

Translation: The author studies the possibility of using a modified form of the
second Remez algorithm for the synthesis of some realizable transmission functions
of mode selectors and directed couplers on lines with uneven, associated wave, phase
rates. Results are given for the calculation of best approximation polynomials.
A comparative analysis is given of the Chebyshev and the root-mean-square approxi-
mations for the transmission functions of coupling units. Original article: six
tables and five bibliographic entries. Resume.

1/1

USSR

UDC   621.372.833.1

LEYKIN, V. Yu. and MALOVICHKO, A. A.

"H_{20} and H_{40} Wave Coupler"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No. 33, 1971, p 174

Abstract: The purpose of this device is to reduce the dimensions and construction of waveguide couplers. The basic waveguide is slotted on its broad wall along the direction of the major axis, with an auxiliary coupled waveguide, its axis perpendicular to the broad wall of the basic guide, mounted on the broad wall and above the slots. A sketch of the device is shown.

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USSR

UDC: 621.372.85

LEYKIN, V. Yu.

"Electrical Stability of the Slotted Coupling Elements of Two Waveguide Volumes"

Elektron. tekhnika. Nauchno-tekhn. sb. Kontrol'no-izmerit. appa-ratura (Electronic Engineering, Scientific-Technical Collection, Control and Measurement Equipment) 1970, No. 3(21), pp 45-55 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3B181)

Translation: Expressions are obtained for the total electric field amplitude on the periphery of longitudinal and transverse slots cut into the side wall of a rectangular multiwave waveguide.

1/1

USSR

UDC 541.64:543.872

DAVANKOV, A. B. (deceased), LEYKIN, Yu. A., SMIRNOV, A. V., SLOZHENIKINA,
T. Ya., and KORSHAK, V. V., Moscow Chemical Technological Institute imeni
D. I. Mendeleyev

"Investigation of the Thermooxidative Destruction Processes of Some
Phosphorus Containing Ion Exchange Resins"

Abstract: Some phosphorus-containing cationic and amphoteric ion exchange
resins were studied by means of thermal analysis. The mechanism of decom-
position of phosphorus containing ionogenic groups has been investigated
by a combination of thermal analysis, IR-spectroscopy, potentiometric
titration, paper chromatography and elemental analysis data of the dry
residue of the pyralytic products. It was established that the amphoteric
ion exchange resin decomposes by a mixed mechanism including reactions of
free phosphonic and phosphonous acid groups in the intralayer form.

1/1

Polymers and Polymerization

USSR

DAVANKOV, A. B., (deceased), LEYKIN, Yu. A., RATAYCHAK, V., and
KORSHAK, V. V., Moscow Chemico-Technological Institute imeni D. I.
Mendeleev, Moscow

"Synthesis and Study of Polymeric Complex-Forming Agents with
Aminoethylphosphonic Acid Groups"

Abstract: A macroporous chloromethylated styrene-divinylbenzene
copolymer with 20% divinylbenzene that contained 17.7-18.2% Cl
was aminated with N,N-dialkyl-beta-aminoethylphosphonic acid
diethyl esters $R_2N(CH_2)_2P(O)$. $(OEt)_2$ (I; R = Me, Et). At high
temperatures and in polar solvents, conversion of the initially
introduced diester groups to monoester groups took place by the
mechanism $-CH_2\overset{+}{N}R_2-(CH_2)_2-P(O)(OEt)_2 \overset{Cl^-}{\underset{-RCl}{\longrightarrow}} -CH_2NR_2(CH_2)_2 \cdot P(O) \overset{OEt}{\underset{O^-}{\diagup}}$.
Amination with I(R = Me) proceeded more effectively and with a
higher yield than that with I(R = Et). In a side reaction,

1/2

USSR

DAVANKOV, A. B., et al., Vysokomolekulyarnyye Soyedineniya, Vol 15, No 6, Jun 73, pp 1203-1214

monoester groups that had been introduced into the copolymer reacted with chloromethyl groups under formation of phosphonic acid benzyl esters that contained a readily hydrolyzable C-O-P link. Tests with the aminated copolymer that contained monoester groups and was obtained upon the reaction with I($R = Me$) showed that the product of this reaction acted as a selective chelating agent adsorbing preferentially UO_2^{++} cations from HNO_3 solutions in the presence of Ca^{++}, Co^{++}, and Fe^{3+}.

2/2

USSR   UDC 541.183.2 + 541.64 + 547.538.141

LEYKIN, Yu. A., DAVANKOV, A. B., KORSHAK, V. V., and CHERKASOVA, T. A.,
Institute of Element-Organic Compounds Academy of Sciences USSR, and Moscow
Chemical-Technological Institute imeni D. I. Mendeleyev

"The Influence of the Substituent Effect on the Strength of Functional Groups
in Polystyrenephosphonic Acid Cationites"

Abstract: Acid strength of ionic groups in three-dimentional cationites de-
pends on physical and chemical factors. Physical factors such as the degree
of crosslinking or hydrophilicity of the polymer matrix determine the amount
of free and hydrated water in the cationite gel. The chemical factors include
intramolecular electric effects of the substituents which shift the electron
density in common cation exchange systems. These effects were studied in a
series of monofunctional polystyrenephosphonic acid cationites and an equa-
tion was developed relating the electron-donor effect of the polymer sub-
stituents in a mixture of p- and m- isomers to apparent dissociation constant
of the cationite

$$\sigma_F = \frac{pK' - pK_0'}{\rho} - \sigma_F^x$$

1/2

USSR

LEYKIN, Yu. A., et al, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 2, Feb 71, pp 273-277

where σ^-_{R} = the values for substituents -OR, R, obtained by Kabachnik. It was determined that the pK' value for nonporous resins corresponds to the pK' value of 1-20% crosslinked resins containing 1-3% of divinylbenzene; this may be due to the content of free water in the micropores.

2/2

USSR

UDC 541.64:678.745

SMIRNOV, A. V., LEYKIN, YU. A., DAVANKOV, A. B., KORSHAK, V. V.,
Moscow Institute of Chemical Technology imeni D. I. Mendeleev,
Moscow, Ministry of Higher and Secondary Specialized Education RSFSR

"Study of Acid-Base Equilibrium and Complex Formation on Polyam-
pholites with Pyridine and Phosphonic Acid Groups"

Abstract: Polyampholites (PA) of the APF-type (i.e. based on co-
polymers of styrene with pyridines) possess iogenic groups of
opposing polarity and interesting physicochemical properties, such
as formation of inner salts, high thermal stability, and a specific
mechanism for the sorption of heavy metals. The sorption mechanism
of uranyl nitrate and the acid-base equilibrium were studied.
Formation of inner salts in PA was shown by IR spectra and thermal
analysis. It was found that the sorption involves complex forma-
tion of the phosphonic acid groups with the heavy metals. It is
proposed that the sorption mechanism for uranyl nitrate from
strongly acidic media involves the formation of a four-membered
1/2

USSR

SMIRNOV, A. V., et al, Vysokomolekulyarnyye Soyedineniya 12, No 7,
1970, pp 1480-1489

ring, including two oxygen atoms and the phosphorus atom of the
phosphonic acid group plus the uranium atom of a uranyl group.
The structure of this complex was confirmed by IR spectroscopy,
liquid chromatography, and thermal analysis.

USSR

SHEFTEL', I., TEKSTER-PROSKURYAKOVA, G., LEYKINA, A.

"Posistors"

Moscow, Radio, No 3, March 1971, pp 55-56, 58

Abstract: The general characteristics of thermistors with positive tempera-
ture coefficients of resistance, called posistors, are discussed. The basic
parameters of some Soviet-made posistors are presented and numerous possible
applications of them are suggested. It is pointed out that the resistance of
posistors depends not only on the temperature of the sample but also on the
voltage applied to it. Means of controlling the temperature dependence of
the resistance of the posistor by connecting posistors with line resistors or
with thermistors with negative temperature coefficients of resistance are
discussed. Static volt-ampere characteristics showing the dependence of the
current passing through the posistor on the voltage applied to it under con-
ditions of thermal equilibrium between the posistor and the environment are
presented on a logarithmic scale. It is noted that these curves characterize
the dependence of the posistor resistance on the power dissipated by it. It
is pointed out that the numerous possibilities of using posistors are based

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USSR

SHEFTEL', I., et al., Radio, No 3, March 1971, pp 55-56, 58

on use of their temperature dependence of resistance and volt-ampere charac-
teristics and that they can operate in DC or AC circuits up to 400 hertz.
Use of posistors for thermal compensation in transistorized equipment is
especially prospective, and the mechanism of their effectiveness here is
described.

2/2

USSR

IL'IN, G. M., LEYKINA, B. M., NIKITINA, T. N., OTKUPSHCHIKOVA, M. I.,
FITIALOV, S. Ya.

"A Linguistic Approach to the Problem of Constructing an Information System"

Translation: The paper describes the principles of construction of a
"question-answer" information-logic system. It is assumed that a natural
language can be used as a base for an information language. The actions
of the system are defined by the following relations: 1) text A is an
answer to question Q; 2) an answer to question Q may be extracted from
text A; 3) every answer extracted from text B is extracted from text A
as well; 4) texts A and B give identical answers to any question.
    The methods of extracting an answer from the text are not considered
in the paper.
    Let $3(T)$ designate the number of questions whose answers can be ex-
tracted from text T according to the rules of the given system. The sense

1/2

1/2   018   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--ANTITUMOR AGENTS AND DETECTION OF MODERATE PHAGES IN STAPHYLOCOCCI
  -U-
AUTHOR-(02)-SMOLYANSKAYA, A.Z., LEYKINA, F.I.

COUNTRY OF INFO--USSR

SOURCE--ANTIBIOTIKI, 1970, VOL 15, NR 6, PP 514-519

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PHAGE, ANTIBIOTIC RESISTANCE, STAPHYLOCOCCUS, ANTITUMOR DRUG
  EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1867   STEP NO--UR/0297/70/015/006/0514/0519

CIRC ACCESSION NO--AP0125478
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0125478

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ANTITUMOR ANTIBIOTICS AND
ANTIMETABOLITES PROVED TO BE PRONOUNCED INDUCERS OF STAPHYLOCOCCAL
PHAGES, WHILE ALKYLATING AGENTS AND ANTITUMOR ALKOLIDES POSSESSED NO
SUCH PROPERTIES IS MOST CASES. 94PERCENT OF WIL STAPHYLOCOCCAL STRAINS
WERE CARRIERS CF MODERATE PHAGES INDEPENDANT OF THEIR BIOLOGICAL
PROPERTIES, SUCH AS PATHOGENECITY, PIGMENTATION, ANTIBIOTIC RESISTANCE
AND PHAGE TYPES.   FACILITY: INSTITUTE FOR EXPERIMENTAL AND
CLINICAL ONCOLOGY OF ACADEMY OF MEDICAL SCIENCES OF THE USSR, MOSCOW.

UNCLASSIFIED

Acc. Nr.:   *AP0031639*   Ref. Code: UR 0219

THE EFFECT OF TRAINING FOR ALTITUDINAL HYPOXIA ON THE INTENSITY
 OF PROTEIN SYNTHESIS IN THE BRAIN AND RESISTANCE OF ANIMALS
                     TO SPASTIC FACTORS

Mayzelis, M.Ya.; Meyerson, F.Z.; Leykina, Ye.M;
             Popko, N.A.; Gvirtsman, L.Ye.
Institute of Normal and Pathological Physiology of the AMS of the USSR and Moscow
            Research Institute of Psychiatry

    In tests staged on rats subject to study were the intensity of Methionine S^{15} incorpo-
ration in the cerebral proteins, the nucleic acids content in the brain cortex and also
the reaction of the animals to the effect produced by spastic factors. It is shown that
during intermittent training for altitudinal hypoxia the protein synthesis is activated,
especially in the hemispheric cortex, the RNA level in the cortex rises and the resistan-
ce of the animals to the effect of spastic agents (pentylene tetrazol, audiogenic sti-
muli) increases.

                                                            2 mK

1/1   REEL/FRAME
                            19691766

USSR   UDC 612.82.015.348-06:612.232

MAYZELIS, M. YA., MEYERSON, F. Z., LEYKINA, YE. M., POPKO, N. A., and GVIRTSMAN, L. YE., Laboratory of Experimental Cardiology, Institute of Normal and Pathological Physiology, Academy of Medical Sciences USSR, and Radiology Laboratory Moscow Scientific Research Institute of Psychiatry, Ministry of Health RSFSR

"The Effect of Training for Altitude Hypoxia on the Intensity of Protein Synthesis in the Brain and Resistance to Convulsants"

Abstract: In the late stages of training, when the resistance of the experimental rats to hypoxia was high, protein synthesis increased steadily in the medulla, hypothalamus, and cortex. After the cessation of training, it gradually decreased. The increased protein synthesis in the cortex was paralleled by a rise in RNA concentration. At the same time, the animals exhibited resistance to convulsive doses of pentylenetetrazol and audiogenic stimulation.

1/1

111

1/2   027   UNCLASSIFIED   PROCESSING DATE--23OCT70

TITLE--OTOGENIC HYDROCEPHALY -U-

AUTHOR-(02)-LEYKINAS, N.L., ALEKSEYEV, S.I.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK OTORINOLARINGOLOGII, 1970, NR 3, PP 43-46

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BRAIN, MENINGITIS, CEREBROSPINAL FLUID, PROTEIN, SURGERY, EAR, ANTIBIOTIC

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/1168   STEP NO--UR/0607/70/000/003/0043/0046

CIRC ACCESSION NO--AP0107649
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0107649
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FOR A TWENTY YEAR PERIOD
(1949-1968) THE AUTHORS EXAMINED 30 PATIENTS, AGED UP TO 25 YEARS, WITH
HYDROCEPHALY. THERE WERE 17 MEN AND 13 WOMEN. HYDROCEPHALY WAS THE
RESULT OF CHRONIC SUPPURATIVE EPI OR EPIMESOTYMPANITIS IN 29 PERSONS
(MORE OFTEN DURING EXACERBATION) AND ACUTE OTITIS MEDIA IN ONE CASE. BY
THE CLINICAL PICTURE THE DISEASE WAS SIMILAR WITH CEREBRAL OR CEREBELLAR
ABSCESS, RERELY, WITH MENINGITIS. CONGESTIVE MANIFESTATIONS ON THE
FUNDUS OCULI WERE REVEALED IN 30 PATIENTS, IN A NUMBER OF CASES THERE
WAS A DETERIORATION OF THE EYE VISION. REGRESS OF SYMPTOMS OCCURRED
SLOWLY. IN THE MAJORITY OF CASES THE CEREBROSPINAL FLUID SHOWED NO
INFLAMMATORY SIGNS, THE QUANTITY OF PROTEIN WAS LOW, RANGING FROM
0.099PERCENT TO 0.26PERCENT, CYTOSIS, UP TO 4 CELLS. THE DIAGNOSIS OF
OTOGENIC HYDROCEPHALY IN 17 PATIENTS WAS ESTABLISHED AS THE RESULT OF
EXAMINATION, IN 13, AFTER UNSUCCESSFUL OPERATIVE SEARCH FOR CEREBRAL
ABSCESS. OUT OF 30 PATIENTS 28 WERE SUBJECTED TO A RADICAL OPERATION ON
THE EAR; ALL 30 PATIENTS, TO DEHYDRATION AND ANTIBIOTIC (UP TO
5,000,000-6,000,000 UNITS DAILY) THERAPY; FOR THERAPEUTIC PURPOSES TWO
PATIENTS WERE SUBJECTED TO LUMBAR PUNCTURE (OVER TEN TIMES), FOUR, TO X
RAY THERAPY, ONE, TO DECOMPRESSION TREPHINING OF THE SKULL. 21 PATIENTS
WERE DISCHARGED FROM THE HOSPITAL WITH RECOVERY, 8, WITH PERSISTENT
RESIDUAL MANIFESTATIONS, ONE PATIENT DIED AS THE RESULT OF BLOCK ON THE
LEVEL OF THE FOURTH VENTRICLE.   FACILITY: KLINIKI BOLEZNEY UKHA,
GORLA I NOSA AND KLINIKI NERVNYKH BOLEZNEY GOR'KOVSKOGO MEDITSINSKOGO
INSTITUTA IM.S.M.KIROVA.

UNCLASSIFIED

USSR   UDC 621.396.677.49.012.12

LEYKO, N. S. and MAYATSKIY, V. I.

"Statistical Properties of the Radiation Patterns and Selection of Ratings for Dolph-Chebyshev Arrays"

Abstract: Since antenna excitation is always accompanied by random errors, the authors apply statistical procedures to the problem of determining the extreme radiation pattern sidelobe level and the optimal selection of the nominal excitation of Dolph-Chebyshev arrays on the assumption that as the sidelobe level approaches 0, these arrays display a binomial distribution. Considering the ratios of the nominal beamwidth to the nominal and statistical sidelobe levels in a field at the 0.7 level, the normally distributed phase and amplitude errors are determined and the probability density distribution for a vectorized random radiation pattern is given, including an asymmetry factor K^2. The statistical sidelobe level is then found from the variance of the amplitude and phase errors, the number of array elements, their spacing in wavelengths, and either the sidelobe level of the nominal radiation pattern or its main beamwidth. The formulas require computer solutions. They are simplified for engineering calculations and graphs are
1/2

USSR

shown for various sidelobe levels and probabilities when $K^2 = 1$.   If $K^2 \neq 1$, the problem generally cannot be solved. A comparison of the statistical and nominal curves shows a considerable difference for small sidelobe values, which is explained by the nature of the distribution as the main beamwidth increases. The minimum statistical sidelobe level is found from the Rayleigh distribution to correspond to some value of the minimum nominal level, which also determines the optimal nominal Dolph-Chebyshev array parameters. Thus, for example, if the amplitude-phase variance sum is greater than 0.05, the minimum statistical level corresponds to sidelobe levels within the limits 0.01-0.03. The authors believe that their procedure will allow a more rational choice of the nominal array design parameters, since problems which cannot be solved when the sidelobe level is chosen less than a minimum value are eliminated and the statistical functions permit a more specific appraisal of the balance between low sidelobe levels and wide beamwidths.

2/2

1/2   027   UNCLASSIFIED   PROCESSING DATE--09OCT70
TITLE--PROBLEM OF REFLECTION OF SPEECH SIGNALS IN THE NERVOUS SYSTEM -U-

AUTHOR-(02)-CHISTOVICH, L.A., LEYMAN, I.I.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL VYSSHEY NERVONY DEYATEL'NOSTI, 1970, VOL 20, NR 2, PP
  413-421
DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SPEECH, NERVOUS SYSTEM, SIGNAL DETECTION, SIGNAL PROCESSING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/1658   STEP NO--UR/0247/70/020/002/0413/0421

CIRC ACCESSION NO--AP0106404
                              UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0106404
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PAPER OUTLINES THE THEORETICAL
PRINCIPLES OF APPROACH USED IN INVESTIGATING THE PRECEPTION OF SPEECH
SIGNALS (DEFINITION OF THE PROBLEM, A PRIORI PRESUMPTIONS, TERMINOLOGY).
THE METHODS AND RESULTS OF THE EXPERIMENTAL INVESTIGATION ARE
DESCRIBED.

UNCLASSIFIED

TITLE--UNIMOLECULAR AND BIMOLECULAR RECOMBINATION IN KCL:IN,AG AND KBR:IN
  CRYSTALS -U-
AUTHOR-(04)-LEYMAN, V.I., DENKS, V., LUKANTSEVER, N.L., SAVIKHIN, F.A.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(5), 1455-61

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, CHEMISTRY

TOPIC TAGS--REACTION KINETICS, POTASSIUM CHLORIDE, BROMIDE, INDIUM,
  SILVER, THERMOLUMINESCENCE, REACTION MECHANISM, IONIZATION,
  RECOMBINATION LUMINESCENCE, ELECTRON HOLE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/0169   STEP NO--UR/0181/70/012/005/1455/1461

CIRC ACCESSION NO--AP0129425
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0129425
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KINETICS WAS INVESTIGATED OF
ELECTRON HOLE PROCESSES IN THE CRYSTALS KCL-IN, AG AND KBR-IN IN
EXCITATION WITH THE RADIATION IN THE REGION OF THE C BAND OF ABSORPTION
OF IN PRIME POSITIVE CENTERS.   IN WEAK EXCITATION, THE KINETICS OF
RECOMBINATION EXCITATION IS UNIMOL.; I.E., ELECTRONS RECOMBINE WITH THE
SAME IN PRIME2 POSITIVE CENTERS FROM WHICH THEY WERE REMOVED IN
IONIZATION OF IN PRIME POSITIVE CENTERS. IN THIS UNIMOL. MECHANISM,
LIGHT STORED BY THE PHOSPHOR IS PROPORTIONAL TO THE INTENSITY OF
EXCITATION, E, THE RATIO OF THE PEAKS OF THERMOLUMINESCENCE IS
INDEPENDENT OF E, AND THE APPLICATION OF AN ELEC. FIELD LEADS TO AN
INCREASE IN THE MAT. OF STORED LIGHT.   FACILITY: INST. FIZ.
ASTRON., TARTU, USSR.

UNCLASSIFIED

L

USSR

UDC 616.981.42-036.866

LEYMAN, V. N., Chair of Infectious Diseases, Kuybyshev Medical Institute

"Medical Evaluation of Work Capacity in Brucellosis Patients"

Moscow, Klinicheskaya Meditsina, No 2, 1970, pp 111-115

Abstract: Evaluation of the fitness of brucellosis patients is complicated by the polymorphism of the disease, its protracted course, the likelihood of relapses, and the variety of joint, muscle, and nerve pains in the absence of objective changes. The evaluating physician must be sure of the diagnosis and know the specific clinical form and phase of the disease, the degree of compensation, and the effectiveness of the therapy employed. He must also be familiar with the complications, concurrent diseases, and sequellae of brucellosis. Patients should be kept under regular observation and treated, but not placed on the temporary disability list unless there is a marked deterioration in their condition or there is no evident response to therapy. Suitable work arrangements are suggested for persons suffering from cardiovascular, neurologica, and joint disorders.

1/1

- 91 -

Acc. Nr: *AP004553 2*

Ref. Code: *UR 0497*

PRIMARY SOURCE: Klinicheskaya Meditsina, 1970, Vol 48, Nr *2*, pp *111-115*

EXPERT TESTIMONY OF THE WORKING CAPACITY IN PATIENTS SUFFERING FROM BRUCELLOSIS

Leyman, V. N.

Summary

The polymorphism of brucellous infection, the duration of the course, susceptibility to relapse, multiple arthralgia, myalgia, neuralgia accompanied by very insignificant objective changes impede the proper evaluation of the state of patients. For the expert testimony of the working capacity the physician should know the clinical form and stage of brucellosis, the degree of compensation of the pathological process and to foresee the possible outcome of the disease. Patients with brucellosis should be treated persistently and only in extreme instances, in significant deterioration of their condition, in a prolong course of the disease and ineffective therapy to give them temporary invalidity. Careful attention paid to brucellous patients, individual and proper treatment, rational placement and subsequent rehabilitation is the noble task of clinicists and expert-testimony physicians.

1/1

REEL/FRAME
19780552

PI 6

1/2   011   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--TRI, AND HEXASUBSTITUTED BENZENES -U-

AUTHOR-(02)-REYKHSFELD, V.O., LEYN, B.I.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 264,389
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--03MAR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--BENZENE DERIVATIVE, ACETYLENE HYDROCARBON, CHEMICAL PATENT,
  CHEMICAL SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/0843   STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0136277
                          UNCLASSIFIED

CIRC ACCESSION NO--AA0136277
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE COMPDS. ARE PREPD. BY
  CYCLOTRIMERIZATION OF MONO, AND DISUBSTITUTED ACETYLENES, RESP., BY
  REFLUXING IN A SOLVENT OVER 1-30 EQUIVS. BIS(CROTYLNICKELHALIDES).
    FACILITY: LENINGRADSKIY TEKHNOLOGICHESKIY INSTITUT IM. LENSOVETA.

UNCLASSIFIED

Acc. Nr. AT0045639

Abstracting Service: 4/70

CHEMICAL ABST.

Ref. Code
UR0020

89918n Cyclic trimerization of mono- and disubstituted acetylenes under the influence of π-allyl complexes of nickel. Reikhsfel'd, V. O.; Lein, B. I.; Makovetskii, K. L. (Leningrad. Tekhnol. Inst. im. Lensoveta, Leningrad, USSR). Dokl. Akad. Nauk SSSR 1970, 190(1), 125-7 [Chem] (Russ). The catalytic activity of π-crotylnickel halides (I) and their complexes with AlBr₃ or Ni(OAc)₂ in the cyclic trimerization of 1-hexyne (Ia), 2-heptyne, 4-octyne, and PhC:CH (Ib) was investigated. The reactions were carried out in C₆H₆ at 50°. A mixt. of cyclic trimers, 90% of which was 1,3,5-Bu₃C₆H₃ (II), was obtained in 98% yield from Ia in the presence of (π-C₃H₇NiCl)₂, while 1,2,4-Bu₃C₆H₃ was obtained exclusively in 90% yield with (π-C₃H₇NiI)₂. Ib gave chiefly linear polymers in the presence of I, but the reaction could be shifted to favor the formation of II when (π-C₃H₇NiI)₂·Ni(OAc)₂ was used as catalyst. The presence of π-allyl groups was not a necessary condition for the catalytic activity since (π-C₃H₅)₂Ni·2AlBr₃ and thermally activated NiCl₂ were also effective catalysts. Thus, the presence of a complex of monovalent Ni is apparently more important than the manner in which it is stabilized. DBJR

REEL/FRAME

19780625

7

1/2   023   UNCLASSIFIED   PROCESSING DATE—30OCT70
TITLE—LUBRICANT COOLANT FOR COLD WORKING OF METALS -U-

AUTHOR-(05)-SOKOLOVSKAYA, V.V., RUDNEV, A.V., GARIBOV, V.R., LEYN, YU.I.,
   BARINOV, V.YE.
COUNTRY OF INFO—USSR

SOURCE—U.S.S.R. 264,581
REFERENCE—OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI, 1970,
DATE PUBLISHED—03MAR70

SUBJECT AREAS—MATERIALS

TOPIC TAGS—METALWORKING LUBRICANT, CHEMICAL PATENT, HEAT TRANSFER FLUID,
   GLYCEROL, ETHYLENE GLYCOL

CONTROL MARKING—NO RESTRICTIONS

DOCUMENT CLASS—UNCLASSIFIED
PROXY REEL/FRAME—3002/0093   STEP NO—UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO—AA0127720
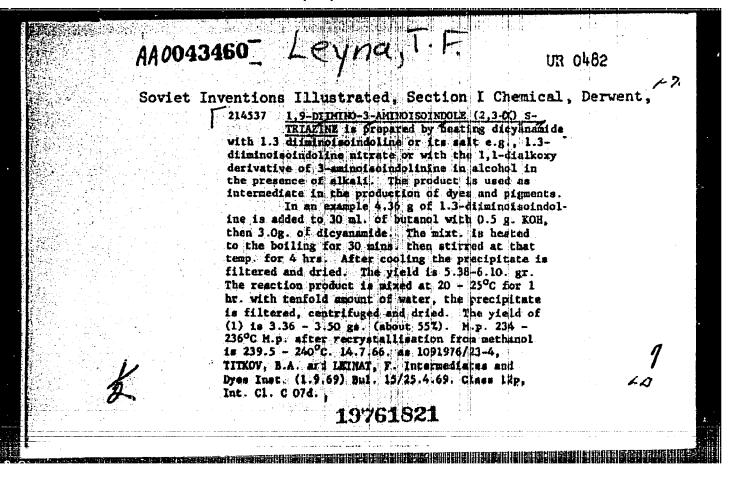   UNCLASSIFIED

CIRC ACCESSION NO--AA0127720
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE LIQ. CONTAINS CALCINED
  SODA 0.3-0.4, NANO SUB2 0.12-0.14, NA TARTRATE 0.14-0.16, NAOH
  0.03-0.05, GLYCEROL OR ETHYLENE GLYCOL 0.002-0.005, AND H SUB2 O TO MAKE
  100PERCENT.   FACILITY: VSESOYUZNYY NAUCHNO, ISSLEDOVATEL'SKIY
  INSTRUMENTAL'NYY INSTITUT.

UNCLASSIFIED

AA0043460 *Leyna, T. F.*   UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent,

214537   1,9-DIIMINO-3-AMINOISOINDOLE (2,3-α) s-
         TRIAZINE is prepared by heating dicyanamide
with 1.3 diiminoisoindoline or its salt e.g., 1.3-
diiminoisoindoline nitrate or with the 1,1-dialkoxy
derivative of 3-aminoisoindolinine in alcohol in
the presence of alkali. The product is used as
intermediate in the production of dyes and pigments.
         In an example 4.36 g of 1.3-diiminoisoindol-
ine is added to 30 ml. of butanol with 0.5 g. KOH,
then 3.0g. of dicyanamide. The mixt. is heated
to the boiling for 30 mins. then stirred at that
temp. for 4 hrs. After cooling the precipitate is
filtered and dried. The yield is 5.38-6.10. gr.
The reaction product is mixed at 20 - 25°C for 1
hr. with tenfold amount of water, the precipitate
is filtered, centrifuged and dried. The yield of
(1) is 3.36 - 3.50 gs. (about 55%). M.p. 234 -
236°C M.p. after recrystallisation from methanol
is 239.5 - 240°C. 14.7.66. as 1091976/23-4,
TITKOV, B.A. and LEINAT, F. Intermediates and
Dyes Inst. (1.9.69) Bul. 15/25.4.69. Class 14p,
Int. Cl. C 07d.

                    1976182l

AA0043460

AUTHORS: Titkov, V. A.; Leyna, T. F.

Nauchno – Issledovatel'skiy Institut Organicheskikh Poluproduktov i
Krasiteley

19761822

2/2

USSR   UDC 621.791.053.002.637:546.226

PODGAYETSKIY, V. V., Doctor of Technical Sciences, PARFESSA, G.
I., Engineer, and LEYNACHUK, YE. I., Candidate of Technical Sci-
ences

"The Shape of Sulfide Inclusions in Welds"

Abstract: The article describes results of a study of sulfide
inclusions in welds of varying composition. Welds on carbon and
low-carbon steel display all three types of sulfide inclusions
usually encountered in cast steel, viz. globular and round oxy-
sulfide and sulfide inclusions, sulfide films and chains of
small sulfide inclusions, and complex sulfur-containing inclu-
sions of irregular shape. The shape and composition of the sul-
fide inclusions forming in the welds depend on the conditions for
their elimination. The authors studied the effect of different
titanium and vanadium contents on the shape of welds welded on
low-carbon rimming steel St. 3 under a silicon-free manganese-
free flux (AN-30 or AN-70). A metallographic study showed that
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USSR

PODGAYETSKIY, V. V., et al., Svarochnoye Proizvodstvo, No 12, Dec
70, pp 14-15

the introduction of small amounts of titanium changes the shape
and composition of the sulfide inclusions. There is a signifi-
cant increase in the quantity of complex sulfide films and chains
situated along the primary crystallite boundaries and a decrease
in the number of oxysulfide inclusions. A further increase in
the titanium concentration results in the appearance of complex
nonmetallic inclusions containing titanium carbides and sulfides,
as well as a decrease in the number of film-like sulfide inclu-
sions. With titanium concentrations of 0.5-2.0 percent practi-
cally the entire sulfur enters into the complex nonmetallic in-
clusions, and the films and chains of sulfides completely dis-
appear. The introduction of vanadium changes the shape and
composition of the globular oxysulfide inclusions. In welds
without vanadium these inclusions consist mainly of ferroman-
ganese oxides and silicates. With the introduction of vanadium
the oxysulfide inclusions consist mainly of vanadium oxides and
ferromanganese sulfides, with some sulfide films and chains. In

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USSR

PODGAYETSKIY, V. V., et al., Svarochnoye Proizvodstvo, No 12, Dec
70, pp 14-15

welds with a higher carbon content (up to 0.3 percent), vanadium
carbide inclusions form, which serve as elimination centers for
the sulfides. This reduces the number of film and chain sulfide
inclusions. With a vanadium content of about 4-8 percent prac-
tically the entire sulfur is in the form of irregularly shaped
vanadium carbosulfide particles.

3/3

USSR   UDC 543.272.2

LAUR, Ya. P., and LEYNI, E. I.

"A Device for Gathering Information on the Composition of Gases"

Avtomatiz. i kontrol'no-izmerit. pribory. Nauch.-tekhn. cb. (Automation and
Control-Measuring Instruments, Scientific Research Collection) No 9, 1972,
pp 18-20 (from Referativnyy Zhurnal -- Metrologiya i Izmeritel'naya Tekhnika,
No 1, 1973, Abstract No 1.32.866 by V. S. Krasnova)

Translation: A circuit is described for automated measurement of the compo-
sition of waste gases by one set of gas analyzers on two formaldehyde gen-
erating aggregates with the derivation of information in both the analog form
on the secondary instrument and in digital form of a centralized-control
machine ELRU-2M, developed and introduced by the "KIVIYLI" slate-chemical
works. The logic circuit is realized with the aid of and/not logic elements,
executed on electromechanical relays located in the time-control unit KED-12U
and in all secondary instruments. The electrical circuit of the monitor and
the input bridge of ELRU-2M are fed a constant voltage of 1.5 volts. For
temperature compensation they are united by a three-wire circuit. The gas
analyzers together with the secondary instruments are mounted near technical
pipelines. (2 illustrations)
1/1

1/2   032   UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--MECHANICAL PROPERTIES OF INNER FOOTWEAR COMPONENTS MADE FROM
   PLASTICS -U-
AUTHOR-(02)-LEYNOV, YA.N., ZAYONCHKOVSKIY, A.D.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., TEKHNOL. LEGK. PROM. 1970, (1), 98-101

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, MILITARY SCIENCES

TOPIC TAGS--MATERIAL DEFORMATION, FOOTGEAR, POLYISOBUTYLENE, POLYETHYLENE,
   TEST METHOD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1109   STEP NO--UR/0323/70/000/001/0098/0101

CIRC ACCESSION NO--AT0134795
                        UNCLASSIFIED

CIRC ACCESSION NO--AT0134795

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEPENDENCE OF THE DEFORMATION
OF FOOTWEAR COMPONENTS MADE FROM POLYISOBUTYLENE-POLYETHYLENE MIXTURES
(I) ON THEIR THICKNESS, CHEM. COMPN., LOAD VALUE, AND OTHER FACTORS WAS
STUDIED. THE TEST BARS HAD THE FOLLOWING DIMENSIONS: LENGTH 55 MM,
WIDTH 6 MM, THICKNESS 1-7 MM. THE FLEXIBILITY OF SAMPLES OF THICKNESS
1.5-3 MM MADE FROM I, LEATHER, OR CARDBOARD WAS IDENTICAL. THIS SHOWS
THE POSSIBILITIES FOR THE APPLICATION OF I FOR FOOTWEAR COMPONENTS
PRODUCTION.   FACILITY: VSES. ZAOCH. INST. TEKST. LEGK. PROM.,
MOSCOW, USSR.

UNCLASSIFIED

· USSR

PETROS'YANTS, A. M., ALEKSANDROV, A. P., DOLLEZHAL', N. A., and LEYPUNSKIY,
A. I. (State Committee on the Use of Atomic Energy in the USSR)

"Prospects for the Development of Nuclear Power in the USSR"

Abstract: According to a talk presented at the Fourth UN Conference on the
Use of Atomic Energy for peaceful purposes, the USSR is well furnished with
natural sources of energy, particularly in view of the new discoveries of coal,
petroleum, and natural gas, but the location of sources of energy does not
coincide with the location of industrial centers, the main users of power.
With an anticipated increase in the rate of use of power of 7 to 8% per year,
it is expected that such regions as the European or Central Ural part of the
country will soon require additional sources of atomic power for producing
electricity.
    It is anticipated that emphasis will be placed, in the first stage of
development, on the reactors with thermal neutrons, followed later by reactors
with fast neutrons, as the second stage of development. Reactors of two types
are at present in existence and are being considered for future development:
the tank-type and the canal-type reactors.

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USSR

PETROS'YANTS, A. M., Atomnaya Energiya, Vol 31, No 4, Oct 71, pp 315-323

The tank-type reactors, operating at present in Central Russia, Kola Peninsula, the Caucasus, and the Ukraine, have their main tanks and covers built of steel. They operate on one and two circuits, with water brought to boiling in the active part and steam produced in steam generators.

Canal-type reactors with graphite moderators were first built in 1954. They now usually operate with super-heated steam. Their main advantages over the tank-type reactors consist in the use of zirconium instead of steel and in possessing higher unit power and a more efficient use of fuel up to 18,000 Mw·day/ton. They are also safer, as their active zone is split into individual channels. Their main disadvantage consists in greater size and consequently higher cost. These are the areas where improvement is anticipated.

Canal-type reactors are better suited for adaptation to work with fast neutrons, the main area of anticipated development of Soviet nuclear engineering. An intensive research is now being conducted in this field, with some experimental reactors and small pilot plants having already been built and operating. It is expected that after 1985 the whole European part of the country will have only the fast neutron type reactors.

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. US:

PETROS'YANTS, A. M., Atomnaya Energiya, Vol 31, No 4, Oct 71, pp 315-323

It is anticipated that from now to the year 2000 construction of new thermal power stations will have stopped, with the main emphasis on the development of fast neutron reactors, while building of thermal neutron reactors will continue at a decreasing rate. It is also anticipated that the application of nuclear power will be extended beyond the production of electricity to the production of heating, refrigeration, chemicals, and finally, to desalinization of sea water.

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USSR

LEYPUNSKIY, A. I., Et al

"The BFS-1 Microtron Installation for Investigating Fast Reactor Neutron Spectra"

Moscow, Atomnaya Energiya, January 1974, pp 3-5

Abstract: The BFS-1 microtron installation for measuring fast assembly neutron spectra by the time-of-flight method is described. The BFS-1 facility allows one to model fast assemblies with core diameters up to 1.6 meters. A pulsed mode of reactor operation is provided by introducing into the core a subcritical assembly of a pulsed neutron source. Such a source is provided by a microtron accelerator with target. A neutron beam is extracted from the central region of the assembly through a reentrant hole with a square (100 x 100 mm) cross section. The flight path is 230 meters long. The neutron detector consists of a group of helium counters located in a polyethylene block. Data on spectrometer background and rate of gathering information are given. As an example, the soft part of the neutron spectrum for the BFS-27 assembly is presented.
      The article includes two figures. There are six references.

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USSR   UDC 621.039.5/6

LEYPUNSKIY, A. I., YUROVA, L. N., BOBROV, S. B., MUROGOV, V. M., TOCHENYY,
L. V., TROYANOV, M. F., and SHMELEV, A. N.

"Improving the Physical Characteristics of Fast Plutonium Reactors by
Using U^{233} and Thorium"

Moscow, Atomnaya Energiya, Vol 30, No 6, Jun 71, pp 491-498

Abstract: Investigations carried out on the physics of fast reactors,
both in the USSR and abroad, have shown the requirements for a high breeding
time and safety guarantee may be contradictory. This article seeks to find
ways for resolving these contradictions.
      The authors first discuss the basic physical characteristics of fast
reactors using a mixed fuel by equalizing the field of heat release. Com-
putations showed that in a fast reactor using a mixed fuel composed of
U^{233} and plutonium the radial coefficient of inbalance can be reduced, the
breeding ratio increases significantly, and the doubling time is improved.
Table 1 compares the characteristic of different types of high-power fast
reactors.
      The authors then discuss changing the profile of the heat release
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USSR

LEYPUNSKIY, A. I., et al., Atomnaya Energiya, Vol 30, No 6, Jun 71, pp 491-498

field during the operating period of a high-power fast reactor using a mixed
fuel and give Figure 1 as illustration. They then discuss change in the
reactance during the same period for such a reactor, using Figures 2, 3,
and 4 for graphic visualization. Finally, they discuss the Doppler and
sodium coefficients of reactance in such a reactor and use Figure 5 and
Table 2 to clarify the discussions. Based on their research the authors
claim that the possibility does exist for increasing the power strength and
breeding time of the fuel with the simultaneous assurance of safety for a
fast reactor using a sodium heat carrier; this is possible by using
U^{233} and thorium in conjunction with U^{238} and plutonium in high-power fast
reactors.
        The article contains 5 figures, 2 tables, and a bibliography of
15 titles.

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UDC 621.039.526

USSR

LEYPUNSKIY, A. I.

"The Development of Fast Reactors: Status and Prospects"

Moscow, Atomnaya Energiya, Vol 28, No 4, Apr 70, pp 297-302

Abstract: The obvious advantages of an oxide fuel over a metal fuel for fast reactors led to the use of an oxide fuel in the experimental reactor BR-5, which has been functioning successfully for 11 years. Fast reactors with only an oxide fuel are now under construction in England, France, the U.S., West Germany and other countries. Liquid sodium was chosen as the coolant from the very start. The BR-5 is the first sodium-cooled fast reactor to function in a technically interesting sodium temperature region (500° C). The reactor uses rod-type fuel elements of uranium oxide and plutonium, which in 1965 were replaced with fuel elements of uranium monocarbide. The experience of the development and operation of the BR-5 made it possible to master techniques for handling active sodium and confirmed the

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USSR

LEYPUNSKIY, A. I., Atomnaya Energiya, Vol 28, No 4, Apr 70, pp 297-302

possibility of creating reliable fuel elements. The result was the design and installation of an industrial atomic power station with the fast reactor BN-350 in Shevchenko, the start-up work on which is scheduled to begin soon. At the Beloyarsk Atomic Power Station construction is under way on a third block with the fast reactor BN-600 with a power of 600 megawatts. Studies are continuing on the creation of atomic power stations with higher-power fast reactors. The experimental reactor BOR-60 has been constructed in Melekess for purposes of working out a core design and checking the reliability and economy of fuel elements, with normal operation having been begun at the end of 1969.

The system of nuclear-physical constants now in existence makes it possible to determine the critical mass of a reactor, the effectiveness of controls, the temperature effect of reactivity, etc.

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USSR

LEYPUNSKIY, A. I., Atomnaya Energiya, Vol 28, No 4, Apr 70, pp 297-302

The results of calculations are being confirmed by experiments on the large physical assembly BFS-1. The least study has been devoted to the dynamic properties of fast reactors and the variations in them with fuel burnup. However, measurements on experimental and industrial reactors will permit a more precise determination of these properties as well. Effective methods have been developed for computerized reactor design. More detailed methods are under development for reactor design and optimization requiring the use of the most sophisticated computers. The neutron parameters of materials can be refined by comparing refined calculations with the results of experiments on physical assemblies. Preparations are under way for measurements on a new large reactor stand BFS-2, which will permit the modeling of high-power reactors, with the BN-600 reactor the first to be simulated. With regard to the problem of creating steel for the jackets of fuel elements operating at temperatures of up to 700° C

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USSR

IEYPUNSKIY, A. I., Atomnaya Energiya, Vol 28, No 4, Apr 70, pp 297-302

under high fast-neutron fluxes, tests of steel EI-847 in the BR-5 reactor have shown that it possesses much better properties than other types of austenitic steel. However, only the operation of fuel elements under the actual conditions of an industrial reactor will permit a complete assessment of this steel.

The BN-350 reactor has a loop-system type of design, while the layout for the BN-600 reactor follows the integral principle. Operating experience will make it possible to determine in practice the advantages and disadvantages of these two arrangements. The core of the BN-600 is designed for a higher burnup than the BN-350 at almost the same maximum temperatures on the fuel-element jackets, and the sodium outlet temperature has been increased from $500°$ to $550°$ C. The design of the intermediate heat exchanger has been changed and the discharging system somewhat modified. The main equipment of the

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USSR

LEYPUNSKIY, A. I., Atomnaya Energiya, Vol 28, No 4, Apr 70, pp 297-302

BN-600 is about the same in design as for the BN-350. An important problem is the creation of a reliable steam generator. The article tabulates data on fast reactors now operating or under construction in the USSR (BR-5, BOR-60, BN-350, BN-600).

An increase in the unit power (to 1 megawatt or more) and the sodium temperature (by 30-50° C) is one of the principal ways to lower capital costs for the installation of fast reactors. The following measures are possible for improving the economy of the fuel cycle: 1) increasing the conversion ratio by 0.1 or more by using a mixture of uranium and plutonium monocarbides as fuel; 2) reducing the external fuel cycle time; 3) increasing the fuel burnup fraction; 4) increasing specific power; 5) developing unsealed-in fuel elements; 6) creating cores with an internal conversion ratio of about one; 7) equalizing and stabilizing heat release by the appropriate selection

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USSR

LEYPUNSKIY, A. I., Atomnaya Energiya, Vol 28, No 4, Apr 70, pp 297-302

of core composition and reactor shields. A table is given listing characteristics of reactors with an electric power of 1 hectowatt (BN-600 parameters) with a monocarbide core and an external fuel cycle time of 0.5 year.

The national economy of the USSR in the next 20-30 years will require the installation of a large number of atomic power stations with a total power of hundreds of millions of kilowatts. The article presents a table listing approximate costs of uranium for different variants for the development of a nuclear power industry over the course of 30 years with a total power at the end of the period of 600 and 300 hectowatts. The variants include: 1) water- or steam-cooled reactor; 2) water- or steam-cooled reactor plus fast breeder reactor with oxide fuel; 3) water- or steam-cooled reactor plus fast reprocessing reactor with oxide fuel plus fast breeder reactor with oxide

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USSR

LEYPUNSKIY, A. I., Atomnaya Energiya, Vol 28, No 4, Apr 70, pp 297-302

fuel (fast reactors put into operation in 10 years); 4) same as 3), but fast reactors put into operation in 15 years; 5) same as 3) up to 15 years, then fast breeder reactor with oxide fuel replaced by fast breeder reactor with carbide fuel and external fuel cycle time = 0.5 year. The results show that a large-scale nuclear power industry can be based only on fast reactors, and even a five-year delay in putting them into operation means an overexpenditure of about 300,000 (100,000) tons of natural uranium. Without fast reactors nuclear power engineering may be only an episode in the development of power engineering.

7/7

USSR   UDC: 536.463+662.311.1

KIRSINOVA, Z. V., LEYPUNSKIY, O. I.

"Study of Mechanical Stability of Hot Cracks in Powder"

Novosibirsk, Fizika Goreniya i Vzryva, No. 6, March 1970, pp 72-80

    Abstract: The stability of cracks is analyzed in the case when the loads
pulling the crack apart are created by excess pressure within the crack, for
example that resulting from the flow of gas combustion products leaving the
crack. The increased pressure, pushing the gas out of the crack, can lead to
rupture and further propagation of the crack. The area of crack sizes retain-
ing stability when the internal surface burns is determined. The critical
crack propagation rate is defined. Propagation at lower rates leads to self-
stabilization of the crack. It is assumed as the results are presented that
the combustion and extension of the cracks do not change the properties of the
material. The boundaries of the area of stability and conditions of self-
stabilization are determined when there are tensile stresses in the material.

1/1

USSR   UDC: 536.46:533.6

FROLOV, Yu. V., KOROTKOV, A. I., LEYPUNSKIY, O. I., POKHIL, P. F.

"Burning of Aluminum in the Composition of Heterogeneous Condensed Systems"

V sb. Fiz. Aerodispersn. sistem. Vyp. 3 (Physics of Aerodisperse Systems
—collection of works, No 3), Kiev, Kiev University, 1970, pp 126-137
(from RZh-Mekhanika, No 7, Jul 71, Abstract No 7B805)

Translation: A brief survey is presented of previously completed works
on burning of aluminum. Work on studying burning of the metal and the
principles which govern burning of metallized heterogeneous condensed
compositions is done on a semiclosed installation and in a constant-pressure
device. The pressure interval is 10-100 atmospheres. The authors con-
sider the effect which various factors (pressure, agglomeration, etc.)
have on burning of aluminum in a composition of condensed systems. An
experimental formula is derived for determining the time of burning of
aluminum particles $\tau_b = 0.67 d^{1.5}/a_c^{0.9}$, where d is the diameter of the
particles in microns; a_c is the relative concentration of oxygen-containing
active compounds H_2O+CO_2 in percent. Bibliography of thirteen titles.
Authors' abstract.
1/1

Combustion

"Place of Action of a Catalyst in the Combustion of Condensed Substance"

Abstract: The combustion at 5-60 atm of pressed charges consisting of poly-
methylmethacrylate and NH_4ClO_4 in the weight ratio of 22.5:77.5 and containing
1% of Fe_2O_3 was studied. The temperature distribution in the condensed and
gas phases during combustion was determined by means of thermocouples. It
was established that in the pressure range above 10 atm, in which Fe_2O_3
acted as a catalyst, the catalyst reduced the temperature gradient in the
gas phase, with the result that heat transfer from the gas phase to the
condensed phase diminished; the catalyst substantially increased the width
of the heating + decomposition zone in the condensed phase; the catalyst
increased the evolution of heat in the decomposition zone of the condensed
phase and the gas layer immediately adjacent to this zone; the catalyst
practically did not change the mean volume rate of heat evolution in the
gas phase. The relations established indicated that the catalyst exerted
1/2.

USSR

ZENIN, A. A., et al., Doklady Akademii Nauk SSSR, Vol 198, No 2, 1971, pp 361-362

its action in the condensed phase layer next to the charge surface and in a small part of the gas phase adjacent to this surface. (Manuscript submitted by Academician V. N. Kondrat'yev, 17 Jul 70)

2/2

TITLE--NONSHRINKING BINDER -U-   UNCLASSIFIED   PROCESSING DATE--20NOV70

AUTHOR-(03)-LEYRIKH, V.E., PRCKHOROV, V.KH., VEPRIN, I.B.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 192,048
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--01APR70

SUBJECT AREAS--MATERIALS

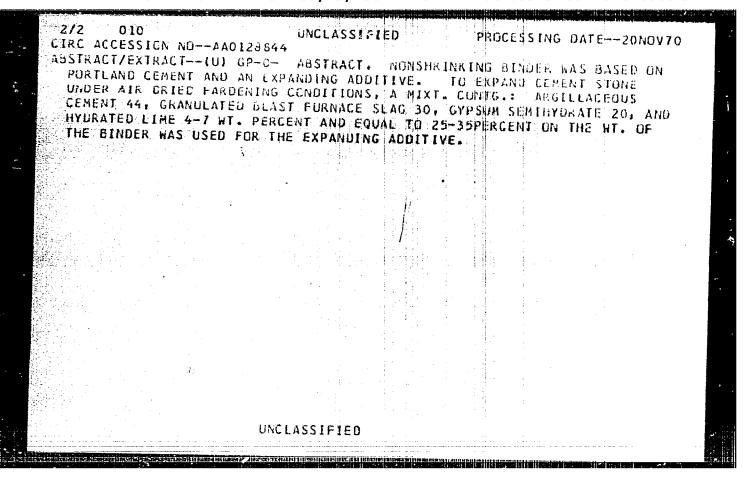TOPIC TAGS--CEMENT, PATENT, BLAST FURNACE SLAG, GYPSUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1445   STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0128844
                        UNCLASSIFIED

CIRC ACCESSICN NO--AA0128644
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NONSHRINKING BINDER WAS BASED ON
   PORTLAND CEMENT AND AN EXPANDING ADDITIVE.   TO EXPAND CEMENT STONE
   UNDER AIR DRIED HARDENING CONDITIONS, A MIXT. CONTG.: ARGILLACEOUS
   CEMENT 44, GRANULATED BLAST FURNACE SLAG 30, GYPSUM SEMIHYDRATE 20, AND
   HYDRATED LIME 4-7 WT. PERCENT AND EQUAL TO 25-35PERCENT ON THE WT. OF
   THE BINDER WAS USED FOR THE EXPANDING ADDITIVE.

UNCLASSIFIED

1/2   010   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--INVESTIGATICN OF CONCRETES WITH DIFFERENT KINDS OF DISPERSE
 STRUCTURES AND FORMS OF MOISTURE BINDING IN CEMENT STONE -U-
AUTHOR-(04)-SAVVINA, YU.A., KAZANSKIY, V.H., LEYRIKH, V.E., KAZANSKIY,
 M.F.
COUNTRY OF INFO--USSR

SOURCE--KCLLOIDNYY ZHURNAL, 1970, VOL 32, NR 3, PP 421-426

DATE PUBLISHED------70

SUBJECT AREAS--MATERIALS

TCPIC TAGS--CEMENT, STONE, MECHANICAL PROPERTY, POROSITY, MOISTURE
 MEASUREMENT, CCNSTRUCTION MATERIAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/2164   STEP NO--UR/0069/70/032/003/0421/0426

CIRC ACCESSICN NO--AP0125747
                            UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A COMBINED STUDY HAS BEEN MADE OF
HYDROPHILIC, PHYSICAL AND MECHANICAL PROPERTIES OF CEMENT STONE WITH
DIFFERENT KINDS OF DISPERSE STRUCTURES. BY MEANS OF THE METHODS OF
THERMOGRAMS AND ENERGOGRAMS OF DRYING, IT IS POSSIBLE TO CHARACTERIZE
THE MOISTURE DISTRIBUTION NOT ONLY ACCORDING TO THE FORMS OF BINDING,
BUT ALSO ACCORDING TO POROSITY AND SURFACE AREA. THE RELATIONSHIP HAS
BEEN CONSIDERED BETWEEN THE PHYSICAL AND MECHANICAL PROPERTIES OF
CONCRETES WITH DIFFERENT CEMENT STONE STRUCTURES AND THE AMOUNTS OF
MOISTURE IN THEM WITH DIFFERENT FORMS OF BINDING. THE GAS AND WATER
PERMEABILITY OF CEMENT STONE AND CONCRETE IS MAINLY DETERMINED BY THE
PRESENCE IN THEIR POROUS STRUCTURE OF MACROPORES WITH R LARGER THAN 10
PRIME NEGATIVE5 CM AND DEPENDS LITTLE ON MICROPORIUS STRUCTURE.
FACILITY: NII BETONA I ZHELEZOBETONA, MOSCOW, KIEV. TEKHNOLOGICHESKIY
INST. LEGKOY PROMYSHLENNOSTI.   FACILITY: VNII MAGISTRAL'NYKH
TRUBOPROVODOV, MOSCOW KIEV. INZHENERNO-STROITEL'NYY INSTITUT.

UNCLASSIFIED

TITLE--SPECTROSCOPIC STUDY OF THE LUMINESCENT ASSOCIATES OF RHODAMINE DYES
-U-

AUTHOR--LEYSHIN, L.V., NIZAMOV, N.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. SPEKTROSK. 1970, 12(1), 102-7

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--DYE, LUMINESCENCE, FLUORESCENCE, ORGANIC SOLVENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0236   STEP NO--UR/0368/70/012/001/0102/0107

CIRC ACCESSION NO--AP0106892
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0106892
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FLUORESCENCE OF RHODAMINE DYES
(G, 6G, 3B), EXTD. FROM H SUB2 O INTO CCL SUB4 AT ROOM TEMP., WAS
STUDIED. THE DYES FORM IN CCL SUB4 FLUORESCENT ASSOCS. WITH THE
FLUORESCENCE EMISSION MAX. SHIFTED TO 525 NM. A REACTION MECHANISM IS
SUGGESTED FOR THE FLUORESCENCE IN CCL SUB4. ADDN. OF A POLAR SOLVENT,
SUCH AS CHCL SUB3, PROH, OR ME SUB2 NCHO, DECREASES THE 525 NM MAX. AND
INCREASES THE MAX. AT 560 NM. THIS EFFECT MUST BE CONSIDERED WHEN
DEVELOPING ANAL. EXTN. METHODS USING RHODAMINE DYES AS THE FLUORESCENT
REAGENT.

UNCLASSIFIED

TITLE--RESPONSE OF PLANTS GROWN FROM LEFT AND RIGHT FRUITS OF SUGAR BEET
  PLANTS TO THE DIRECTION OF THE TERRESTRIAL MAGNETIC FIELD AND TYPE OF
AUTHOR-(02)-NIKULIN, A.V., LEYSLE, V.F.

COUNTRY OF INFO--USSR

SOURCE--FIZIOLOGIYA RASTENIY, 1970, VOL 17, NR 3, PP 471-477

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--MAGNETIC FIELD EFFECT, NITROGEN, NUTRITION, PLANT CHEMISTRY,
  CHLOROPHYLL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1143   STEP NO--UR/0326/70/017/003/0471/0477

CIRC ACCESSION NO--AP0123128
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0123128
ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. PLANTS OF ONE SEEDED SUGAR BEET
   PLANTS WERE CULTIVATED UNDER FIELD CONDITIONS FROM SEEDS OF L AND D
   BIOLOGICAL FORMS ORIENTED DURING SOWING TOWARDS EITHER THE S OR N
   GEOMAGNETIC POLE. RANDOMLY ORIENTED SEEDS SERVED AS CONTROLS (C). TO
   STUDY THE RESPONSE OF PLANTS GROWN FROM L OR D FRUITS AMMONIUM (A) OR
   NITRATE (N) NITROGEN SUPPLIED TO A PHOSPHORUS POTASSIUM BACKGROUND WAS
   EMPLOYED. THE GERMINATION POWER AND SEED VIGOR, FRESH WEIGHT PER 100
   PLANTS DURING THINNING, CATALASE ACTIVITY, CHLOROPHYLL CONTENT AND
   RESPIRATION RATE OF LEAVES WERE DETERMINED DURING THE VEGETATION PERIOD.
   THE GERMINATING POWER AND SEED VIGOR WERE HIGHER IN LEFT FRUITS WITH A
   SOUTHERN ORIENTATION. PLANTS GROWN FROM THESE FRUITS DEVELOP AT A
   HIGHER RATE, POSSESS A HIGHER CATALASE ACTIVITY (BY 19PERCENT),
   CONTAINED MORE CHLOROPHYLL (52PERCENT), RESPIRE AT A HIGHER RATE
   (19PERCENT) AND YIELD A LARGER CROP (13PERCENT) OF BETTER QUALITY
   (6PERCENT). RIGHT HAND FRUITS ON THE OTHER HAND GERMINATED MORE
   RAPIDLY, YIELDED PLANTS WITH A FASTER GROWING 20PERCENT) AND WITH HIGHER
   RATE OF PHYSIOLOGICAL PROCESSES (7-32PERCENT) WHEN THE FRUITS WERE
   ORIENTED TOWARDS THE NORTHERN MAGNETIC POLE. AMMONIUM FORM OF NITROGEN
   EXERTS A FAVORABLE EFFECT ON PLANTS FROM LEFT HAND FRUITS, WHEREAS THE
   NITRATE FORM EXERTS A FAVORABLE EFFECT ON PLANTS FROM RIGHT HAND FRUITS.
        FACILITY: VORENEZH AGRICULTURAL INSTITUTE.

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USSR

LEYTEN, A.

"A Special-Type Discrete-Programming Problem"

Translation: The author considers the following problem:

$$z = \sum_{j=1}^{n} c_j [x_j] \to \max. \qquad (1)$$

$$\sum_{j=1}^{n} a_{ij} x_j \leqslant b_i, \quad i = 1, \ldots, m. \qquad (2)$$

$$x_j > 0, \quad j = 1, \ldots, n. \qquad (3)$$

Here $[x_j]$ is the integral part of the number x_j.

    Closely bound up with problem (1)-(3) are the following two problems:
    1) Linear-programming problem subject to constraints (2)-(3) and with objective function

$$z' = \sum_{j=1}^{n} c_j x_j \to \max. \qquad (4)$$

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USSR

LEYTEN, A., <u>Tr. vychisl. tsentra. Tartus. un-t</u>, 1971, vyp. 22, pp 41-46

2) Integer linear-programming problem with objective function (4) and subject to constraints (2), (3), supplemented by the condition

$$x_j = \text{integer}, \quad j = 1, \ldots, n. \tag{5}$$

Let us designate the objective functions for these problems as follows: z_D for problem (1)-(3), z_L for (2)-(4), z_T for (2)-(5). It is easily shown that

$$z_D^* \geqslant \max\left\{z_T^*, z_L^* - \sum_{j=1}^{n} c_j \left\{x_j^L\right\}\right\}. \tag{6}$$

* * *

Here z_D^*, z_T^*, z_L^* are optimal values of the corresponding objective functions; $\left\{x_j^L\right\}$ is the fractional part of the number x_j^L; x_j^L is a component of the optimal plan of problem (2)-(4).

The author gives a reduction of problem (1)-(3) to a problem in mixed integer linear programming. There is a separate study of the case where all coefficients a_{ij} and b_i are nonnegative. It is noted that an approximate solution to problem (1)-(3) can be obtained by solving problems (2)-(4) and (2)-(5) (since inequality (6) takes place).

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LEYTEN, A., Tr. vychisl. tsentra. Tartus.un-t, 1971, vyp. 22, pp 41-46

A geometric interpretation of problem (1)-(3) is given in the case n = 2. In the general case the following informal interpretation of problem (1)-(3) (given a_{ij}, $b_i \geqslant 0$ for all i, j) is given. Let i be indices of production factors; j indices of types of output; a_{ij} the s٠ ٠nt of factor i needed for production of a unit of product j; b_i available resources of factor i; c_j profit per unit of product j.

Let us assume that products are indivisible: i.e., they contribute a profit only for finished units. Let our objective be the maximization of profit for finished products with the given resources. Designating the vector of sought volumes of production output as $(x_1, \ldots, x_n)$, we obtain model (1)-(3).

It is noted that in problem (1)-(3) the integral part $[x_j]$ can be replaced by the nearest integer on the right $]x_j[$. The resulting informal formulation of the problem is altogether different, but the mathematical and computational aspects of the problem do not change significantly.

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USSR

LEYTEN, A.

"Almost Discrete Linear-Programming Problems"

Tr. vychisl. tsentra. Tartus. un-t (Works of Computer Center of Tartu University), 1971, vyp. 22, pp 47-54 (from RZh-Mate atika, No 5, May 72, Abstract No 5V411 by YU. FINKEL'SHTEYN)

Translation: The article considers a linear-programming problem with variables $x_1, \ldots, x_n$ and the additional constraint

$$x_j \in A^j = \bigcup_{l_j=0}^{n_j} A^j_l, \quad j = 1, \ldots, n_1 \ (n_1 \leqslant n).$$

Here $A^j_{t_j}$ is a segment on the real axis. Various particular cases are presented. A reduction of the initial problem to a mixed-integer, linear-programming problem is given. A geometric interpretation in the case $n = 2$ is presented. It is noted that with the transition from the initial problem to a mixed-integer problem the number of variables can increase significantly. Therefore, the author believes that the most promising approach to the solution of almost discrete problems is the approach of DALTON and LLEWELYN (see RZh-Matematika,

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